

St. Athan Northern Access Road

Landscape and Visual Impact Assessment

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**Prepared for:
Welsh Government**

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1. INTRODUCTION

Scope and Aims

This report provides a landscape and visual impact assessment (LVIA) for the proposed St. Athan Northern Access Corridor (NAC).

The purpose of the assessment is to define the existing or 'baseline' landscape character and visual context of the site (herein referred to as the 'Site'), assess the implications of the proposed St. Athan NAC (herein referred to as the 'proposed Scheme') on landscape character and visual amenity through consideration of the nature of the receptor (sensitivity) and the nature of the predicted effect (magnitude of effect) and consider relevant mitigation.

Finally the assessment aims to provide a summary of the significance of likely residual effects. (i.e., those impacts which cannot practicably be further reduced through mitigation).

Structure

This assessment is structured as follows:

- outline of the proposed Scheme;
- outline explanation of the assessment methodology, with a more detailed methodology given in Appendix A;
- description of the relevant planning policies;
- description of the existing landscape characteristics of the Site and its context (the landscape 'baseline');
- description of the existing visual characteristics of the Site and its context (the visual 'baseline');
- analysis of potential landscape effects arising from the proposed Scheme and their significance;
- analysis of potential visual effects arising from the proposed Scheme and their significance; and
- final statement of likely significant landscape and visual effects.

Description of the Development

The proposed Scheme is located on land between the small settlements of Llanmaes, Eglwys Brewis and Boverton, and immediately north of the Royal Air Force (RAF) St. Athan Ministry of Defence (MOD) site, as illustrated in Figure 1 Site Context. The proposed Scheme can be described as a new section of two-lane highway with associated infrastructure (including lighting, fencing, acoustic barriers and signage). The design includes extensive landscape and ecological mitigation and enhancements including linear tree belts, tree and shrub planting, native hedgerows, hedgerow trees and species rich grassland. The route of the proposed Scheme links the B4265 at its western extent to the St. Athan site at its eastern extent, and is approximately 2 km in length.

Key Parameters for Assessment

This section sets out the dimensional parameters of the proposed Scheme to be used in considering the potential for impacts on landscape character and visual amenity. It is anticipated that the potential for impacts will relate largely to the loss of existing landscape features, the visibility of the vehicles which may use the new road, e.g., cars and Heavy Goods Vehicles (HGVs) and the potential increase in localised lighting levels.

The key aspects of the development proposals relevant to the LVIA may be described as:

- visibility of large plant and machinery during the construction period;

- introduction of temporary construction compounds and material storage in the view of sensitive receptors;
- introduction of new structures into the landscape;
- introduction of new structures into the view of sensitive receptors;
- increase in traffic to and from the construction site;
- increase in the proximity of traffic to sensitive residential receptors;
- loss of existing landscape features; and
- landscape mitigation and enhancement works.

Design Development and Integrated Mitigation

The proposed Scheme has been developed to include a range of primary measures such as the retention of existing trees and hedgerows (including advanced planting) which are integrated into the project design. A range of secondary measures such as the development of a landscape and ecological mitigation and enhancement scheme has been designed to address landscape and visual impacts as far as practicable.

Extent of Study Area

The extent of the Study Area is determined by the potential visibility of the proposed Scheme in the surrounding landscape. Its extent is proportionate to the size and scale of the proposed Scheme and nature of the surrounding landscape. Current guidance (Guidelines for Landscape and Visual Impact Assessment GLVIA3)) states that the Study Area should include 'the full extent of the wider landscape around it which the proposed development may influence in significant manner'

For the purposes of this LVIA, the Study Area has been defined, by a combination of a Zone of Theoretical Visibility (ZTV) (see Figure 2), on-site observations and professional judgement. Based upon the nature of the proposed Scheme, it is considered that it is highly unlikely that significant effects will be possible from further than 2.0 km from its boundaries.

Assessment Stages

The landscape and visual effects of the proposed Scheme have been assessed at the following stages of the development (assuming the construction commences in 2018):

- Construction: 2018 - 2019;
- Winter Year 1: 2019; and
- Summer Year 15: 2034.

Data Sources

Baseline data has been gathered from the following sources listed within Table 1 below:

Table 1 – Baseline information data sources

Data	Source
	MAGIC website - http://magic.defra.gov.uk/MagicMap.aspx
Statutory and non-statutory designations	Register of Landscapes Parks and Gardens of Special Historic Interest in Wales, CADW. Vale of Glamorgan.gov.uk

Table 1 – Baseline information data sources

Data	Source
Landscape character and perceptual qualities	http://landmap-maps.naturalresources.wales/ Welsh Government, Roads in Lowland Areas',
Planning Policy	Planning Policy Wales (PPW) (2012) The Vale of Glamorgan Adopted Unitary Development Plan 1996 - 2011 (adopted 2005) Townscape character Conservation Area Appraisals for Conservation Areas within the study area Landscapes Working for the Vale of Glamorgan (January 1999) Technical Advice Note 10: Tree Preservation Orders Technical Advice Note (TAN) 12: Design (2016) Technical Advice Note (TAN) 18: Transport (2007) Regional planning policy, potential future landscape change
Landscape pattern and land uses	1:25,000 digital mapping for the Vale of Glamorgan and surrounding area Ordnance Survey (OS) maps Aerial photography

Consultation

A long list of potential viewpoints was created through analysis of the ZTV, OS maps and aerial photography. Consultation with Vale of Glamorgan Council (VoGC) was undertaken during September and October 2016 to agree potential viewpoints that were then tested during site visits.

Site Visits

Site visits were undertaken by a chartered Landscape Architect on the 10th and 11th of October 2016 to gain an understanding of the landscape context of the proposed Scheme, to test all potential viewpoints and identify any additional viewpoints required to be assessed as part of the LVIA.

During the site visits the weather conditions were dry and sunny with clear visibility.

Limitations

No technical difficulties or practical problems were encountered in carrying out the LVIA presented in this document. Private land outside of the control of the applicant was not accessed, in accordance with best practice.

The field work was conducted during October when general climatic conditions were mild, as such the deciduous vegetation was in full leaf and potentially screened some views that would

otherwise be available during winter months. As such a comparison of visibility or visual effects over four seasons or during a wide range of light and weather conditions was not possible.

2. PLANNING POLICY

2.1 National Planning Policy

Planning Policy Wales (2012)

The Planning Policy Wales (PPW) Edition 6 – February 2014 (Reference 2) establishes a 'plan led' system which is intended to manage development whilst protecting *'the amenity and environment of towns, cities and the countryside in the public interest while encouraging and promoting high quality, sustainable development.'* (Para 3.1.1)

Chapter 5 of PPW describes the Welsh Governments' objectives for the conservation and improvement of the natural environment. This includes recognition of statutory and non-statutory designated landscapes and ensures 'non-statutory designations' such as Special Landscape Areas (SLAs) are selected on a robust, scientific and justifiable assessment of the site conditions. They also recognise that these designations should not unduly restrict acceptable development.

PPW also recognises that the natural heritage and valued landscapes of Wales are not confined to statutorily designated sites but extend across all of Wales (Para 5.1.1).

The importance of LANDMAP is recognised within the PPW as a resource for the development of landscape assessments, informing local planning policy, guidance and decision making (Para. 5.3.13).

Chapter 5 of PPW also recognises the importance of trees, woodland and hedgerows to the natural environment, both for biodiversity and contribution to landscape character.

2.2 Local Planning Policy

Vale of Glamorgan Unitary Development Plan Adopted 2005

The adopted Unity Development Plan (UDP) (2005) includes the following policies which relate to the protection of environmental resources within the area:

ENV 4 – Special Landscape Areas (SLA)

New development within or closely related to the following SLAs will be permitted where it can demonstrate that it would not adversely affect the landscape character, landscape features or visual amenity of the SLA:

- i. Ely Ridge and Ridge Slopes
- ii. Lower Thaw Valley
- iii. Upper Thaw Valley
- iv. Nant Llancarfan
- v. Cwrt Yr Ala Basib
- vi. Duffryn Basin and Ridge Slopes
- vii. Castle upon Alun

ENV 4 recognises the potential effect development can have on the countryside and quality of the rural landscape and seeks to protect the SLAs listed above from adverse effects.

This policy is carried over to the emerging Local Development Plan as Policy MG17.

ENV 5 – The Glamorgan Heritage Coast

The special environmental qualities of the Glamorgan Heritage Coast will be conserved and enhanced with the exception of limited informal recreation facilities at Cwm Colhuw, Ogmores-by-Sea and Dunraven, the remainder of the area will be treated as a remove zone with priority being given to agriculture, landscape and nature conservation

ENV 5 recognises the national importance of this section of coast for its attractive undeveloped characteristics and seeks to ensure this character is retained.

This policy is carried over to the emerging Local Development Plan as Policy MG24.

3. ASSESSMENT METHODOLOGY

Assessment Methodology

This LVIA has been based on the following guidance:

- *Guidelines for Landscape and Visual Impact Assessment, Third Edition. (2013)* Landscape Institute and Institute of Environmental Management and Assessment, referred to as GLVIA3 in this assessment;
- Interim Advice Note 135/10 (W) Landscape And Visual Effects Assessment Wales Only (2014) Highways Agency; and
- LANDMAP Information Guidance Note 3, LANDMAP, Landscape and Visual Impact Assessment (Countryside Council for Wales, May 2013).

Photography incorporated into the figures accompanying the LVIA has been based upon the guidance given in Landscape Institute Advice Note 01/11 *Photography and photomontage in landscape and visual impact assessment* unless stated otherwise.

These publications, supplemented by additional government guidance and topic papers, form the standard reference for undertaking highway related landscape character and visual assessment in the UK.

Overview of Landscape Assessment Methodology

The methodology for landscape assessment used in this report is set out in Appendix A.

Within Wales, the LANDMAP information system provides a unique methodology which allows information about landscape to be gathered, organised and evaluated into a nationally consistent data set. The database contains information which is both relatively objective, e.g., rock type and historical information along with subjective information, such as sensory responses and cultural interpretation.

These are recorded and evaluated into a nationally consistent data set based upon five separate 'aspect layers' based upon:

- Visual & Sensory: identifies perceptual landscape qualities as well as including information on individual physical attributes of landform and land cover, and the relationships between them;
- Geological Landscape: identifies those landscape qualities which are linked to the control or influence exerted by bedrock, surface processes, landforms and hydrology;
- Landscape Habitats: identifies the characteristics and spatial relationships of habitats and vegetation;
- Historic Landscape: identifies those qualities that depend on key historic land uses, patterns and features; and
- Cultural Landscape: includes information on the relationship between people and places, meaning of places to people, how landscape has shaped peoples actions and how peoples' actions have shaped the landscape.

For the purpose of this assessment the desk study takes into account the Visual and Sensory, Landscape Habitats, Historic Landscapes and Cultural Landscape aspects of LANDMAP and is illustrated on Figures 3 to 7.

Landscape and visual baseline conditions are derived from a combination of desk-top studies and observation on site during October 2016. A desk based review of the relevant Local Planning Authorities planning policies and designated areas was undertaken to identify likely sensitive receptors and validated during the site visit.

Overview of Visual Assessment Methodology

The methodology for visual assessment used in this report is set out in Appendix A.

'An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity' (para 6.1 GLVIA3).

Individual receptors are identified through the baseline interpretation of mapping and professional judgement. The process involves defining the scope of the assessment (Study Area/ range of people and places affected), description of characteristics of the development, establishment of the visual baseline, identification of visual receptors and selection of assessment of viewpoints structured by receptor groups (e.g. residents, users of recreational spaces, business users and motorists).

Overview of Sensitivity, Magnitude and Significance

The magnitude of a predicted landscape and visual effects relates to the size, extent or degree of change likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct effect resulting in the loss of landscape components, or a change beyond the land-take of the proposed Scheme that might have an effect on the character of the area, and whether the effect is permanent or temporary.

The relationship between the sensitivity of receptors and the magnitude of likely effects allows the relative significance of predicted effects to be defined. Table A.9 in Appendix A provides a matrix used to describe this relationship, and so allow a relative level of significance of any predicted landscape effects to be categorised.

For the purposes of this LVIA, effects of moderate or major significance are considered to be significant (para 3.34 GLVIA3). In accordance with GLVIA3 guidance, Appendix A Table A.18 sets out descriptions for each of the significance categories. These are provided as an example to be supplemented by professional judgement and an explanation.

4. LANDSCAPE BASELINE

Landscape Receptors

A description of the Welsh landscape at a national scale is provided by the LANDMAP assessment. Tables 3 to 7 on the following pages provide summaries of the individual 'aspect areas' within all five LANDMAP aspects which are wholly or partially located within the Study Area, including a summary description and evaluation of each aspect area.

Value of the Landscape Receptor

The Study Area includes no national landscape designations relating to landscape value. At a local level the Study Area contains the part of the Lower Thaw Valley SLA and the Glamorgan Heritage Coast as illustrated on Figure 1 Site Context.

There are no Registered Parks and Gardens within the Study Area.

The Schedule Monuments (SMs) listed within Table 2 are located within the Study Area, the closest of these being Bedford Castle (Cof Cymru - National Historic Assets of Wales reference GM113):

The Study Area also contains a relatively large number of listed buildings; the individual impact on the visual amenity from, or setting of these are not considered within the scope of this assessment.

Table 2 – Summary of relevant Visual and Sensory baseline information

SM Reference
GM113 - Bedford Castle
GM020 - Caermead Roman Site
GM188 - Morfa House Round Barrow
GM189 - Domen Fawr Round Barrows
GM137 - Llantwit Major Castle
GM142 - Llantwit Major Monastic Settlement (Site of)
GM142 - Llantwit Major Monastic Settlement (Site of)
GM300 - Fleminston Deserted Village
GM083 - West Orchard Manor House
GM307 - Deserted Medieval Village North East of Rock Farm

Table 3 – Summary of relevant Visual and Sensory baseline information

Aspect Area	LANDMAP Summary description	Evaluation
4 Lower Thaw Valley Sides (VLFGLVS110)	Relatively uncommon enclosed, partially wooded valley, with attractive views of fields, hedgerows, and wooded areas on valley sides and ridgetops with a strong sense of place.	High
5 Lower Thaw Valley Floor (VLFGLVS305)	Distinctive flat landscape of pasture, drainage channels and marshy areas. Power lines/pylons detract from existing views. Consistent in character but hedgerows are gappy and overgrown in places. Contrasts with surrounding areas.	Moderate
7 Lias Plateau (VLFGLVS805)	Distinctive Vale landscape with plateau topography and limestone buildings. Long views to the coast to the hill in places. Settlements of stone and render complement the landscape. New development has a minor effect on the area's character.	Moderate
10 Glamorgan Coast Intertidal (VLFGLVS920)	Highly distinctive and rare, good in condition and of consistent character, this is unspoilt for the majority of its length. High in scenic quality with superb views along coast, out to sea and of wave cut platforms.	Outstanding
11 Heritage Coastal Strip (VLFGLVS950)	The sole area in the Study Area characterised by high cliffs. Outstanding views to sheer cliffs of clear rock formation and patterns, neighbouring undeveloped beaches and sea. Car parks and poorly sited ancillary buildings have an adverse effect. Strong topography, rock formations and unspoilt quality makes for an area of outstanding character.	Outstanding
12 Heritage Coast Hinterland (VLFGLVS890)	Rare prevalence of stone walls within a coastal area. Outstanding scenic quality due to vernacular buildings, well maintained walls and hedgerows, wind sculpted trees and woodland in secluded incised valleys. Largely unspoilt with small scale development in places and strong sense of place.	Outstanding
13 RAF St Athan (VLFGLVS456)	Undistinctive and not picturesque scenic with views eroded by large scale development. Movement and interest derived from planes landing and taking off.	Low
14 Llantwit Major (VLFGLVS2335)	Well maintained town of consistent and distinctive character comprising stone buildings, medieval street pattern and picturesque views. Other parts of the town are less well maintained or spoil the intrinsic pattern of settlement.	Moderate
15 Lias Plateau (VLFGLVS805)	Distinctive Vale landscape with plateau topography and limestone buildings. Long views to the coast to the hill in places. Settlements of stone and render complement the landscape. New development has a minor effect on the area's character.	Moderate

Table 4 – Summary of relevant Landscape Habitats baseline information

Aspect Area	LANDMAP Summary description	Evaluation
2 Cowbridge East (VLFGLLH118)	Generally an agriculturally improved area of limited value for biodiversity.	Moderate
3 Aberthaw River Valleys (VLFGLLH786)	The aspect area defines a concentration of semi-natural broadleaved woodland and semi-improved neutral grasslands considered of significant biodiversity interest.	High
6 Aberthaw (VLFGLLH839)	The aspect area defines a largely modified landscape of agriculturally improved ground and urbanisation.	Moderate
7 Coastal Grasslands & Cwms (VLFGLLH523)	Habitat of the aspect area is largely protected by site designation. The area supports a number of protected and notable species including Shore Dock.	Outstanding
8 Heritage Coast (VLFGLLH325)	Relatively unmodified coastline supporting limestone cliffs, rocky platforms, cobble, shingle and sandy beaches as well as sub-tidal honeycomb tubeworm reefs (<i>Sabellaria</i> spp.) much of which protected by site designation.	Outstanding
9 Boverton (VLFGLLH897)	Improved agricultural landscape supporting notable arable weeds.	Moderate
10 St Athan (VLFGLLH583)	Built-up area of limited value for wildlife.	Low
11 Llantwit Major (VLFGLLH614)	Built-up area of limited value for wildlife.	Low
12 Ogmere-Llantwit Arable Belt (VLFGLLH582)	Generally comprises an improved agricultural landscape of limited biodiversity interest, however species such as tree sparrow and great crested newt provide additional value.	Moderate

Table 5 – Summary of relevant Historic Landscape baseline information

Aspect Area	LANDMAP Summary description	Evaluation
3 Thaw River Valley (VLFGLHL049)	The Thaw Valley represents a visually coherent, multi-period valley landscape with evidence of occupation dating from the prehistoric, Roman, medieval and post-medieval periods.	High
4 Llysworney and Llandough (VLFGLHL052)	A rich multi-period landscape with evidence of occupation from the Bronze Age, Iron Age, Roman, medieval and post-medieval periods. Well defined dominant landscape pattern, represented by small nucleated settlements set within a largely regular fieldscape of medieval origin.	High
6 Vale of Glamorgan Coastal Littoral (VLFGLHL001)	Archaeologically rich landscape, undergoing rapid change by natural erosion and deposition, comprising a diverse range of sites from early prehistoric period with significant potential for well-preserved buried remains embedded in estuarine silts and peats.	Outstanding
7 St Donat's, Monkknash and St. Brides Major (VLFGLHL036)	Largely intact regular fieldscape and medieval/post-medieval pattern of small, nucleated settlements with significant surviving prehistoric sites, deserted medieval settlements and well-preserved remains of the large Cistercian grange complex at Monkknash.	Outstanding
8 Southern Vale Communication Corridor (VLFGLHL002)	Long-established communications route of considerable historic importance, dating back to the Roman period containing multi-period archaeological sites. The church of St Illtyd at Llantwit Major, its early medieval stone crosses and extensive 13th century grange complex may be of national importance.	Outstanding
9 RAF St Athan (VLFGLHL031)	The only active RAF station within the Vale of Glamorgan and the largest in the country with original buildings and hangers still in use. The isolated parish church of Eglwys Brewis represents the only visible remnant of the pre-1938 landscape.	Moderate
11 RAF Llandow (VLFGLHL033)	Substantial remains of buildings and runways associated with the disused RAF base. Landscape components predating the RAF base are not easily visible.	Moderate

Table 6 – Summary of relevant Cultural Landscape baseline information

Aspect Area	LANDMAP Summary description	Evaluation
1 Rural Village Conservation Areas (VFLGCL028)	A discernible determination by the Unitary Authority to safeguard the social and built components of the historic rural environment of the Vale.	Outstanding
5 Vale of Glamorgan Rural Landscape (VFLGCL039)	High as a relatively untrammelled and evolved surviving agricultural and historic landscape.	High
6 Vale of Glamorgan Railway (VFLGCL009)	The Vale of Glamorgan has recently enjoyed a renaissance thanks to the determined efforts of the Unitary Authority to provide a means of sustainable alternative transport, by transforming what was previously a largely freight line into one carrying passengers between Bridgend and Barry, Penarth and Cardiff on two services per hour. The line passes through a countryside which would otherwise be hidden from view.	High
8 RAF Station, RAF St Athan (VFLGCL004)	Both the largest manned RAF base in the UK and a military community whose enclosed society has influenced the demography of the Vale of Glamorgan; and as the proposed centre for a military academy alongside commercial enterprises.	Outstanding
9 Heritage coast (VFLGCL002)	Landscape designated to reflect (a) the heritage of the coastal Vale, and (b) the relatively unspoiled nature of the landscape.	High
11 St Donats and Atlantic College (VFLGCL006)	Outstanding for the 1960s vision of global understanding through education, juxtaposed with a well-respected Arts Centre.	Outstanding
19 Heritage Coast (VFLGCL)	Landscape designated to reflect (a) the heritage of the coastal Vale, and (b) the relatively unspoiled nature of the landscape.	High

Table 7 – Summary of relevant Geological Landscape baseline information

Aspect Area	LANDMAP Summary description	Evaluation
5 Thaw-Waycock (VLFGLGL514)	Typical dendritic river-flood plain system with highly modified non-natural estuary.	Moderate
7 Ogmere-Nash- Breaksea (VLFGLGL221)	Includes areas and sites of regional, national and international importance for studies of Triassic and Jurassic stratigraphy, palaeontology and sedimentology, mineralisation, Quaternary climate change and coastal geomorphology.	Outstanding
8 Llantwit-St. Athan (VLFGLGL863)	Includes part of Monknaish Coast SSSI with Pleistocene-Holocene features but with no other recorded sites with significant geological exposures.	Outstanding

Table 8 below describes the factors relating to the value of the landscape at a Site and Study Area scale.

Table 8 – Non-landscape Designated Areas/Features

Factor	Study Area	Site
Landscape Quality (Condition)	The landscape of the Study Area is a mix of urban (Llantwit, Boverton, St. Athan, Llanmaes), rural (mainly arable), military (existing RAF St. Athan and disused airfield) and the undeveloped coastal edge (Glamorgan Heritage Coast).	The Site's land-use predominantly relates to agricultural land use, both pastoral and arable, with lesser areas associated with both disused and current extents of the RAF St Athan site.
Scenic Quality	The Study Area contains part of the Lower Thaw Valley SLA and Glamorgan Heritage Coast.	The Site includes no areas of recognised scenic quality.
Rarity	The landscape of the Study Area is a mix of urban, rural, military and coastal land-uses and environments. On the whole it is typical of the wider landscape context regionally.	The Site contains no rare elements or features.
Conservation Interests	The Study Area contains some site designated locally for their habitat quality/ value (Site Important for Nature Conservation), SMs and Listed Buildings.	The Site contains no known conservation interests.
Recreation Value	Taken as a whole, the landscape of the Study Area is of limited recreational value, restricted mainly to the use of Public Rights of Way (PRoWs).	The Site has limited public access and is only of value relating to the limited visibility from PRoWs.
Perceptual Aspects	The Study Area contains no areas which can be regarded as tranquil and wild/remote.	No special perceptual aspects which define landscape character have been identified.
Overall Landscape Value	Medium The Study Area includes a number of areas designated locally for their landscape character and/or perceptual qualities/tranquillity, whilst being heavily influenced by large scale urban and military developments locally.	Medium The Site contains both undeveloped and previously developed land with no important landscape features, other than individual trees, tree groups and woodland belts.

Vegetation Cover

The vegetation within the Study Area is predominately linear tree and hedgerow features associated with land boundaries. There is a relatively low coverage of tree groups which could be considered woodland, the majority of which are located to the northern and eastern edge of the Study Area. Hedgerows tend to be of reasonable quality and condition, and relatively tall (up to 2 m is typical of locations close to the Site).

The agricultural areas are a mixture of permanent pasture and arable crops.

The Site is characterised by its current use of mixed agriculture, as such vegetation is largely limited to linear mature woodland belts along the Site boundary.

Topography

The Site is located within an area of low undulating landform which forms a slight depression in the local landscape. Landform rises to the north and northwest to approximately 60.0 m Above Ordnance Datum (AOD)m offering long distance views in all directions from occasional locations where screening is absent.

The majority of the Site lies at between approximately 50.0 m AOD to 44.0 m AOD, the exception to this is the route of Llanmaes Brook which lies at approximately 36.0 m AOD at its lowest point.

Topography of the Study Area is illustrated on Figure 1 – Site Context.

Influence of Human Activity

The landscape of the Site and its setting has been heavily influenced by human activity with the construction of large areas of residential and military development, highways and railway lines. Occasional large scale developments located outside of the Study Area are clearly visible in the distance, e.g., Aberthaw Power Station.

Settlements

The local settlements have been subject to the sometimes visually chaotic growth of various developments especially those associated with the RAF St. Athan site. Across many of the areas, there is no clear characteristic settlement pattern or building style identifiable, however, historical character is visible within the Conservation Areas, for example, in Llanmaes. Occasional groups of residential properties occur within the countryside, especially around farms. Isolated individual residential properties are scattered along the minor roads and through the countryside.

To the east of the Site is an area of residential properties associated with RAF St. Athan, to the south of the site is a relatively large area of residential properties at Eglwys-Brewis (adjacent RAF St. Athan), and to the west is the edge of Boverton.

To the north of the site is Llanmaes and occasional residential properties located around Milland Farm.

Located immediately adjacent to the Site is a small group of three properties on an un-named road.

Communications/Highways

There is a good network of roads within the Study Area, with the closest major road being the B4265 at the western extent of the Site, Eglwys-Brewis Road is located to the south the proposed Scheme linking the B4265 with Eglwys-Brewis. The wider Study Areas contains a relatively comprehensive network of narrow lanes connecting the small villages and farms.

Public Rights of Way

The Study Area contains a relatively good network of PRoW, especially to the northwest of the Site; these are predominantly located within the rural landscape and link settlements. The closest of these is L12/17/1 which passes through the central section of the Site. The full extent of PRoW within the Study Area is illustrated on Figure 1.

The Site and it's immediate setting

The northern and southern boundaries of the Site are largely formed by a mixture of agricultural land (mostly permanent pasture) and open rough grassland (where it passes through the disused airfield). The eastern extent abuts land within the active section of the RAF St. Athan site (to the south of local road); whereas the western extent of the Site is defined by the B4265.

The Site's character is largely defined by its rural land-use to the western and central section, and its association with RAF St. Athan (both current and historic) to the eastern section.

Summary of the Landscape Baseline

The character of the Study Area can largely be divided into four areas which are defined by a combination of their current and historic development, these are:

- RAF St. Athan and its surrounding residential areas dominating the central and eastern part of the Study Area;
- Llanwit Major/ Boverton urban area, to the west;
- Glamorgam Heritage Coast to the south; and
- the rural landscape covering the majority of the northern area.

Topography plays an important part of defining the landscape character, especially within proximity to the Site where Llanmaes Brook and Boverton Brook follow localised low points.

5. VISUAL BASELINE

Visual Receptors

In order to identify locations with potential to have views of the proposed Scheme and to what extent it is likely to be visible, a ZTV (see Figure 2) was produced.

The ZTV has been prepared based upon the tallest vehicle likely to be regularly using the route, i.e., a HGV. As such, points at 4 m above the proposed ground level were modelled to provide theoretical visibility of the proposed Scheme within a 'bare earth' model of the terrain. The ZTV has been generated by analysis of a 3D digital terrain model (DTM) of the surrounding terrain and the proposed Scheme using the following parameters;

- contours/terrain model based on OS Terrain 5 DTM dataset;
- eye height of viewer set at 1.7m; and
- visibility assessed on a 25m grid throughout the Study Area.

1.1 Range of People and Places Potentially Affected

1.1.1 *Dynamic Views*

Users of local roads gain dynamic views towards the Site to varying degrees dependant on the presence of intervening structures, vegetation, their elevation (in relation to the Site) and direction of travel.

Screening is large in a large part to the presence of the well-maintained and relatively high hedgerows (up to 2 m) and linear tree and shrubs planting in the intervening landscape.

Visual Receptors and Viewpoints

Through a process of consultation with the VoGC and the testing of views within the field, eight viewpoints have been chosen to represent the typical range of views of the Site from within the Study Area. These are listed in Table 9 and illustrated on Figure 8.

The following viewpoints were identified during initial desk-based work but were discounted following field work where it was found that no views of the Site were available and it was predicted that the proposed Scheme would also not be visible:

- PRoW L12/3/1;
- Valeway Millenium Heritage Trail; and
- Residential properties at Chestnut Avenue, Picketston Close.

Table 9 – Viewpoints to be assessed

ID	Name & Location	Distance from Site, Elevation & Direction of View	Receptor Type	Description of View
1	PRoW L16/38/1 (Valeways Millennium Heritage Trail) & Bedford Castle (site of)	0.35 km 54.0 m AOD Southeast	Users of Public Right of Way (Footpath)	<p>Medium distance views across a slightly undulating landscape of permanent pasture and mature tall hedgerows trees and shrubs in the foreground. These elements form the lower part of the scene, with the residential development and larger scale buildings in the RAF St. Athan site and the upper parts of the stacks at the Aberthaw Power Station and Aberthaw Cement Works visible above and forming the skyline in the distance.</p> <p>Users of the PRoW also have open and close distance views along the route of the trail towards the urban edge of Llanmaes.</p>
2	PRoW L12/3/1	0.8 km 62.0 m AOD South	Users of Public Right of Way (Footpath)	<p>Expansive views over the slightly sloping (southwards) open arable farmland with intermittent hedgerow field boundaries and occasional hedgerow trees. Views are dominated by the mixed use development along the northern edge of the RAF St. Athan site which include: residential development and large scale buildings within the RAF St. Athan site (including the Defence Support Group (DSG) super-hanger), the upper parts of stacks at the Aberthaw Power Station and Aberthaw Cement Works and plumes from the cooling towers at Aberthaw Power Station. Millands Farm and Caravan Park are clearly visible in the near distance beyond the boundary hedgerow.</p>
3	Millands Caravan Park	0.1 km 44.0 m AOD South	Residents	<p>Open views from the slightly elevated position over the mature hedgerow field/highway boundary and across a slightly sloping (southwards) permanent pasture towards residential development at RAF St. Athan. Views of these developments are partially screened by mature trees and shrubs along Llanmaes Brook.</p> <p>Peripheral views tend to be restricted by mature trees and shrubs in the near distance, especially those associated with the nearby residential properties of Millands Farm and Froglands Farm.</p>
4	Froglands Farm, Rose Cottage and un-named road.	0.0 km 44.0 m AOD Northeast	Residents	<p>Representative of the small group of residential properties in the centre of the Site. These properties have a range of views dependent upon their individual circumstances, but all tending to include views of the permanent pasture to the east and west of the properties. Views to the west are limited by the accumulation of trees, shrubs and hedgerows in the middle distance along field boundaries, Boverton Brook and those forming the edge of the B42656. Longer distance views are available to the east across the agricultural landscape of permanent pasture, well maintained native hedgerows and occasional tree and shrub groups with large scale buildings and structures associated with both the disused and active parts of RAF St. Athan site visible in the middle distance.</p>

5	Residential properties at Picketston (Old Barn and Picketston Cottage)	0.7 km 44.0 m AOD East	Residents	Representative of the residential properties along the eastern edge of the un-named road through the small Hamlet of Picketston. Views are across rough grassland and arable farmland towards the northern part of the RAF St. Athan site and dominated by a large hanger in the close distance, which along with intermittent trees and shrubs, restrict long distance views.
6	Residential properties on Partridge Road, RAF St. Athan	0.4 km 48.0 m AOD Southeast	Residents	Elevated and filtered views towards the Site over public amenity grassland towards properties along Curlew Crescent and Eagle Road in the close distance. Longer distance views are available over the rooftops of the properties on Eagle Road towards the agricultural landscape between Eglwys-Brewis Road and Llanmaes with the properties at Milllands Farm and Milllands Caravan Park visible.
7	Residential properties on Eagle Road, RAF St. Athan	0.3 km 39.0 m AOD Southeast	Residents	Views from the elevated residential properties across over Eglwys-Brewis Road to the agricultural landscape beyond are across Eglwys-Brewis Road towards the properties at Milllands Farm and Milllands Caravan Park. Landform slopes upwards to the north and the combination of hedgerows, trees and shrubs scattered through the near, middle and far distance combine to result in only small pockets of the permanent pasture being visible. The view includes a storage silo at Great House Farm (visible above the trees in the middle distance and viewed against the skyline) and over-head powerlines on poles which cross the scene.
8	Residential properties on Church Meadow, RAF St. Athan	0.3 km 44.0 m AOD South	Residents	Views looking north from the elevated properties across Eglwys-Brewis Road and permanent pasture towards the eastern extent of the Site, which is partially, screened by hedgerows and trees along field boundaries. The view includes agricultural buildings at Milllands Farm (visible above the trees in the middle distance and viewed against the skyline) and over-head powerlines on poles which cross the scene.
9	Residential properties along Heol Merioneth, Denbridge Drive and Cardigan Crescent	0.0 Km 50.0 m AOD Northeast	Residents	Views looking north east from the rear elevation and rear garden of the properties are towards semi-mature trees and shrubs which grow immediately adjacent the rear plot boundary. Peripheral views are across the rear gardens of adjacent properties.

Summary of Visual Baseline

The views within the Study Area tend to be a mix of either rural and/or urban/developed, the extent of which largely depends upon the location and extent of hedgerows, trees and shrubs within the scene. Views can alter dramatically in a relatively short distance going from what would initially appear as a very rural setting to a view dominated by the large scale buildings and structures located within the RAF St. Athan site (which due to the local topography regular appear against the skyline).

A combination of the local topography and intervening vegetation also results in the majority of the Site being well screened from the majority of the Study Area. The exception to this being the areas immediately adjacent to the Site e.g., Froglands Farm and Rose Cottage, or the elevated residential properties to the south, although the majority of these views tend to be partially filtered by vegetation (hedgerows, trees and shrubs) and/or other buildings and structures.

Views from the network of minor roads and lanes surrounding the Site tend to be heavily restricted by the tall, mature and well maintained hedgerows along the roadside.

6. ENVIRONMENTAL DESIGN AND MANAGEMENT

The proposed Scheme has been developed to include a range of primary measures such as the retention of existing trees and hedgerows (including advanced planting) which are integrated into the project design. A range of secondary measures such as the development of a landscape and ecological mitigation and enhancement scheme has been designed to address landscape and visual impacts as far as practicable.

The following impact avoidance measures have been incorporated into the design or are standard construction or management operations. These measures have therefore been taken into account during the impact assessment process described in this chapter:

- siting the road at the lowest level to maximise natural screening from landform;
- suitable materials will be used, where possible, in the construction of structures to reduce reflection and glare and minimise the visual impact of the proposed Scheme;
- lighting required during the construction and operation stages of the proposed Scheme will be designed to reduce unnecessary light spill outside of the Site boundary; and
- the existing vegetation to be retained, located adjacent to the Site, will be protected to the guidelines within BS5837:2012 Trees in relation to design, demolition and construction – Recommendations, to prevent construction impacts.

Lighting

The effects of lighting have been reviewed as part of the landscape and visual assessment, to determine its effects on the landscape character of the Site and the surrounding area. The potential visual impact of has also been considered on the relevant viewpoints around the proposed Scheme that may be affected, with reference to The Institution of Lighting Engineers report, Guidance Notes For The Reduction Of Obtrusive Light. The following assumptions have been made with regards to the extent of lighting within the proposed Scheme:

- the external lighting installation will adhere to the guidance of the CIBSE Lighting Guide 6: The Outdoor Environment; and
- measures will be implemented to minimise the potential for obtrusive glare, upward light spill and light trespass.

Temporary construction site lighting is proposed to be provided to enable safe working on the construction site in hours of darkness.

It is assumed that the temporary task lighting will only be required at times of darkness during the construction phase.

7. FUTURE BASELINE

The baseline landscape and visual context is the 'Do-Minimum' scenario and is defined as the situation which exists *'immediately prior to the start of construction of the proposed project (including existing roads and other infrastructure elements), together with any known or likely changes (other consented development proposals for instance) which will take place before the projected completion of the project'*. For the purpose of this assessment this point in time is understood to be 2018.

As part of the future baseline it is predicted that the existing character of the landscape and views are unlikely to materially change, with the large scale buildings and structures within the RAF St. Athan site continuing to be an influence.

In the absence of development it is envisaged that the existing situation would largely remain unchanged.

8. ASSESSMENT OF LANDSCAPE EFFECTS

Prediction of Likely Landscape Effects

The potential landscape impacts of the proposed Scheme relate to the loss of existing landscape features and the visibility of new landscape features (temporary and permanent) including how this affects the perceptual qualities and tranquillity of a character area. In the case of the construction of the proposed Scheme, this will relate to the following:

- movement of plant and heavy goods vehicles, both on site and in the surrounding area;
- temporary stockpiling of earth and storage of materials on site;
- establishment of site compounds resulting in temporary structures to serve the workforce;
- crane activity to assist high level construction works;
- temporary external lighting to illuminate site operations after dark;
- permanent new sources of street lighting;
- the loss of existing landscape features such as hedgerows, trees and shrubs; and
- landscape mitigation works.

Overall Character and Key Characteristics of the Study Area

The topography and land-use of the Study Area is considerable factors in defining its character, with many places being influenced by the large scale development within the RAF St. Athan site, or partially hidden within the localised hollows such as Llanmaes Brook. This is further enhanced by the presences of well-established mature high hedgerows along the majority of the minor roads and lanes, and along internal field boundaries.

As discussed earlier, the character of the Study Area can largely be divided into four areas which are defined by a combination of their current and historic development, these are:

- RAF St. Athan and its surrounding residential areas dominating the central and eastern part of the Study Area;
- Llanwit Major/ Boverton urban area to the west;
- Glamorgan Heritage Coast to the south; and
- the rural landscape covering the majority of the northern area.

These have a strong correlation to the division of aspects which form the LANDMAP data and evaluation.

The Site is located within the LANDMAP aspect areas listed within Table 10 and illustrated on Figures 4 to 8.

Table 10 – LANDMAP aspect areas located within the Site

Aspect	Aspect Area	Evaluation
Visual & Sensory	RAF St. Athan	Moderate
	Lias Major	Low

Landscape Habitats	Ogmore-Llanwit Arable Belt	Moderate
	RAF St. Athan	Low
Historical Landscape	Llysworney and Llandough	High
	RAF St. Athan	Moderate
Cultural Landscape	RAF St. Athan	Outstanding
	Vale of Glamorgan Rural Landscape	High
Geological	Llanwit-St. Athan	Outstanding

Individual Elements or Features

Land-use within the Site and its immediately area is predominately agricultural and military. Landscape elements are generally limited to hedgerows, trees and shrubs which contribute to the landscape character locally. The larger scale development within RAF St. Athan contributes to the landscape character on a wider scale due to its elevated position which allows greater visibility. More locally, residential development is evident across the majority of the Study Area.

Specific Aesthetic or Perceptual Aspects

Highways are a well-established land-use within the Study Area and within the landscape immediately adjacent to the Site. Although there is potential for the proposed Scheme to be partially visible within the more rural areas of the Study Area, it is anticipated that its presence will not affect the aesthetic and perceptual qualities of the local landscape.

During construction there would be greater changes in the aesthetic and perceptual qualities through the movement of plant within close proximity to the Site and the introduction of large scale structures in various stages of development, however these will be temporary. At operation, once landscape mitigation elements have become established, the aesthetic and perceptual qualities of the wider Study Area would remain as present with large scale changes only occurring within the confines of the Site itself.

Assessment of Landscape Effects

The Study Area includes no areas designated as national or regional landscape importance, limiting the landscape receptors within the Study Area to those designated by the VoGC and those identified within the relevant LANDMAP aspects evaluations. The main potential for effects on landscape character relates to the intervisibility between the proposed Scheme and the landscape receptors. The proposed Scheme is located within an area which is characterised by relatively low lying topography, an extensive existing highway network, a strong network of intervening landscape features (such as hedgerows, trees and shrubs) and existing built form (such as large residential areas and large scale military buildings). Therefore it is considered that the proposed Scheme is likely to be congruous with its context and therefore have a low potential for affecting the landscape character of the surrounding areas.

'Not Significant' Effects

Due to a variety of factors (including the distance and intervisibility between the proposed Scheme and the receptor and size of the receptor), it is predicted that the landscape receptors listed within Table 11 have no potential to receive significantly adverse landscape effect as a result of the proposed Scheme. As such these are not assessed further.

Table 11 – LANDMAP receptors not to be assessed further

Receptor	Justification	
LANDMAP Cultural and Historic Landscape All aspect areas	The effects of the proposed Scheme on the LANDMAP Cultural and Historic Landscape aspect areas is outside the scope of the LVIA, as such these are not considered further within this assessment. Potential impacts on Conservation Areas and specific cultural assets are considered where necessary and relevant within the assessment on visual amenity.	
LANDMAP Landscape Habitats All aspect areas	Due to the nature of the proposed Scheme and incorporation of a range of primary landscape mitigation measures (such as the retention of existing trees and hedgerows) and an extensive range of secondary measures (such as the development of a landscape and ecological mitigation and enhancement scheme) it is considered that there is no potential for significant effects. The loss of existing features and introduction of new features is included within the assessment of visual and sensory aspect areas and within the assessment of visual amenity.	
LANDMAP Geological Landscape All aspect areas	Due to the nature of the proposed Scheme, i.e., not involving large scale earthworks combined with the large scale of the Geological Landscape aspect area.	
LANDMAP Visual and Sensory	RAF St.Athan	The proposed Scheme will have no impact on the extent of built form, will not result in the loss of any important characteristic feature nor introduce new incongruous landscape features into this low value aspect area. The proposed Scheme will result in change to a small part of this aspect area including the disused airfield to the north of Eglwis-Brewis Road and an area of car park to the north of the DSG super hanger. As such it is considered that the existing characteristic will largely remain unchanged and there will be no significant effects arising.
	Llantwit Major (VLFGLVS235)	The proposed Scheme will be partially visible from the urban edge of this aspect area which is typical of most urban settlements and considered to be an aspect area of moderate value. The lack of intervisibility will result in no change to the existing visual and sensory characteristics; as such it is considered that there is no potential for significant landscape effects.
	Lower Thaw Valley (VLFGLVS110)	Due to distance, topography and intervening vegetation, it is predicted that there will be no intervisibility between the proposed Scheme and the aspect areas, as such it is considered that there is no potential for significant landscape effects.
	Lower Thaw Valley Floor (VLFGLVS305)	Due to distance, topography and intervening vegetation it is predicted that there will be no intervisibility between the proposed Scheme and the aspect areas, as such it is considered that there is no potential for significant landscape effects.
	Heritage Coast Hinterland (VLFGLVS890)	Due to distance, topography and intervening vegetation it is predicted that there will be no intervisibility between the proposed Scheme and the aspect areas, as such it is considered that there is no potential for significant landscape effects.
	Heritage Coastal Strip (VLFGLVS950)	Due to distance, topography and intervening vegetation it is predicted that there will be no intervisibility between the proposed Scheme and the aspect areas, as such it is considered that there is no potential for significant landscape effects.
Glamorgan Heritage Coast Intertidal (VLFGLVS920)	Due to distance, topography and intervening vegetation it is predicted that there will be no intervisibility between the proposed Scheme and the aspect areas, as such it is considered that there is no potential for significant landscape effects.	

Additionally, in respect to the potential impacts relating to the introduction of new sources of night-time lighting within the aspect areas, due to the extensive areas of existing lighting and their large scale in relation to the proposed Scheme, it is not predicted that there is potential for this to result in significant effects. As such, this is not considered further as part of the assessment on landscape character.

Statutory Designations

Other than Bedford Castle, it is not considered there is potential for significant adverse effects on any of the receptors which may be present at the SMs listed within Table 02 and as such have been 'scoped out' of the LVIA.

Non-Statutory Designations

The following landscape areas identified within the baseline studies are located (in part) within the Study Area; however, the proposed Scheme is not located within either of these. As such it is considered reasonable to predict that potential effects will be limited to the visibility of the proposed Scheme and how this affects the scenic qualities and perceptual aspects of the landscape. Table 12 below clarifies the basis for no further assessment of these areas.

Table 1 – Locally designated landscape receptors not to be assessed further

Receptor	Justification
VoGC Policy Area Env 4 - Lower Thaw Valley SLA Data	The proposed Scheme is located approximately 0.7 km to the west of the SLA's boundary. Due to the topography and intervening landscape features (vegetation and built form), the proposed Scheme will be barely noticeable from this receptor. As such it is predicted that there is no potential for significant adverse landscape effects to occur as a result of the proposed Scheme and it is not considered further within the assessment.
VoGC Policy Area Env 5 - The Glamorgan Heritage Coast	The proposed Scheme is located approximately 0.6 km to the west of the SLA's boundary. Due to the topography and intervening landscape feature (vegetation and built form) the proposed Scheme will be barely noticeable from this receptor. As such it is predicted that there is no potential for significant adverse landscape effects to occur as a result of the proposed Scheme and it is not considered further within the assessment.

Conservation Areas

The Study Area contains five Conservation Areas, as listed in Table 13 below. Due to the nature of the proposed Scheme and its distance from each of these areas, it is considered that there is no potential for any impact on these Conservation Areas.

Table 23 – Conservation Area landscape receptors not to be assessed further

Receptor	Justification
Flemingston	The proposed Scheme is located approximately 1.4 km to the west of the Conservation Area boundary. Due to the topography and intervening landscape features (vegetation and built form) the proposed Scheme will be visible from this receptor. As such it is predicted that there is no potential for significant adverse landscape effects to occur as a result of the proposed Scheme and it is not considered further within the assessment.
Gilestown	The proposed Scheme is located approximately 2.5 km to the west of the Conservation Area boundary. Due to the topography and intervening landscape features (vegetation and built form) it is predicted that the proposed Scheme will not be visible from this receptor. As such it is predicted that there is no potential for significant adverse landscape effects to occur as a result of the proposed Scheme and it is not considered further within the assessment.

Receptor	Justification
Llanwit Major	The proposed Scheme is located approximately 1.2 km to the east of the Conservation Area boundary and beyond the relatively large urban area of Boverton. It is considered that the proposed Scheme will not be visible from this area and there is therefore no potential for significant adverse landscape effects to occur as a result of the proposed Scheme. It is not considered further within the assessment.
Boverton	The proposed Scheme is located less than 100 m from the Conservation Area boundary, however, the major of the proposed Scheme is not visible. Where works will take place, they are in the context of the existing highway
Llanmaes	The proposed Scheme is located less than 300 m from the Conservation Area boundary, however, it is anticipated that the proposed Scheme will not be visible from this location.

Landscape sensitivity

An evaluation of the sensitivity of the landscape receptors (see Table 14 below) has been undertaken to provide an assessment of the anticipated magnitude of landscape impacts and the classification of effects on each landscape receptor at construction (2018 – 2019), winter year 1 (2019) and summer year 15 (2034), as described within Table 15.

A full description of the criteria used to assess the above can be found in Appendix A – Methodology.

Table 34 – Landscape Receptor Sensitivity

Receptor	Value	Susceptibility	Sensitivity
LANDMAP Visual and Sensory Aspect Area Lias Plataeu (VLFGLVS805)	Medium – A pleasant landscape with attractive settlements which complement the surrounding landscape. In generally good condition and has a fairly consistent character.	Medium – A generally intact landscape with capacity to accommodate the proposed Scheme without effects upon its overall integrity.	Medium
Llanmaes Conservation Area	Medium – Valued locally	Medium – Some capacity to absorb change	Medium
Boverton Conservation Area	Medium – Valued locally	Medium – Some capacity to absorb change	Medium

Table 15 – Summary of Potential Effects on Landscape Character

Receptor	Sensitivity	Phase	Description of Impacts	Magnitude of impact	Classification of effect
LANDMAP Visual and Sensory Aspect Area Lias Plataeu (VLFGLVS805)	Medium	Construction	The proposed Scheme covers a small part of this aspect area but will result in a change from its characteristic agricultural land-use to part of the highway network. This will cause the loss of landscape features such as trees and hedgerow, erode the landscape pattern and introduce new landscape features such as construction plant, compounds during the construction phase. The proposed Scheme will only affect a small part of this is relatively large aspect area. Furthermore, all new features are common elsewhere within the aspect area.	Very Low	Negligible adverse (not significant)
	Medium	Opening	Temporary construction plant, construction compounds and traffic etc. will be removed but landscape mitigation will be juvenile and not provide a substantial contribution to the local landscape character.	Very Low	Negligible adverse (not significant)
	Medium	Operation	Landscape mitigation will re-introduce lost trees, hedgerows etc., by this point the vegetation will have matured sufficiently to provide benefits to the local landscape character.	Very Low	Negligible adverse (not significant)
	Medium	Construction	The change in views from the PRoW and roads to the south will introduce new uncharacteristic features in the form of construction plant and cause temporary erosion to the rural character. However, these would not be seen in the context of the views of the Conservation Area, but in peripheral views, as such the existing views of the Conservation Area will remain unchanged.	Very Low	Negligible adverse (not significant)
Llanmaes Conservation Area	Medium	Opening	The proposed Scheme may be partially visible from locations which have views of the Conservation Area, but not viewed within the context of the Conservation Area.	Very Low	Negligible adverse (not significant)
	Medium	Operation	Landscape mitigation measures will have matured to reduce the visibility of the proposed Scheme.	Very Low	Negligible adverse (not significant)

Medium	Construction	Construction of the western extent of the proposed Scheme where it joins the B4265 would be visible from the northern part of the Conservation Area. However, these would not be seen in the context of the Conservation Area and are not anticipated to affect its characteristics.	Very Low	Negligible adverse (not significant)
Medium	Opening	The western extent of the proposed Scheme where it joins the B4265 would be visible from the northern part of the Conservation Area. However, these would not be seen in the context of the Conservation Area and are not anticipated to affect its characteristics.	Very Low	Negligible adverse (not significant)
Medium	Operation	Landscape mitigation measures designed to integrate the proposed Scheme with the existing adjacent tree groups will have matured but the proposed Scheme will remain clearly visible. However, these would not be seen in the context of the Conservation Area and are not anticipated to affect its characteristics.	Very Low	Negligible adverse (not significant)

Boverton
Conservation Area

9. ASSESSMENT OF VISUAL EFFECTS

Potential visual effects of the proposed Scheme in comparison with the future baseline visual context are considered in Tables 16 to 23 by reference to representative viewpoints; these assessments should be read in conjunction with Figures 9 to 17 which illustrate the baseline situation at each viewpoint.

The assessment of effects during each assessment scenario is based on a comparison of the future baseline conditions (2018) against the conditions with the proposed Scheme.

Table 16: Representative Viewpoint 1
PRoW L16/38/1 (Valeways Millennium Heritage Trail) & Bedford Castle (site of)

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298017, 169254	Users of Public Right of Way (Footpath)	54.0	0.35	South East
Susceptibility of Receptor to Specific Change		Value of View	Receptor Sensitivity*	
High		Low	Medium	
This PRoW is part of the Valeways Millennium Heritage Trail		Although a pleasant view, it is unlikely to be the reason for visiting, existing views are degraded by residential development and the RAF St. Athan site.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
Partial views of construction within a very small part of the view, which is already degraded by the presence of residential development and large scale structures within the RAF St. Athan site. The movement of construction traffic and temporary task lighting may potentially be visible. Overall, the additional elements will form a small part of the view.				
Magnitude of Visual Impact			Low	
Significance of Effect			Minor Adverse	
OPENING				
The proposed Scheme will be partially visible, viewed within a very small extent of the view with the movement of traffic partially visible. A limited number of lighting columns may be partially visible above vegetation in the far distance but not form the focus of the view, which is likely to be towards the urban edge of Llanmaes. Landscape mitigation will not have sufficiently matured to provide any screening.				
Overall, the addition of the new landscape features will not change the balance of the view.				
Magnitude of Visual Impact			Low	
Significance of Effect			Minor Adverse	
OPERATION				
The landscape mitigation will have matured and provide additional screening of the proposed Scheme including traffic moving along it. Existing trees and shrubs are likely to have matured future and provide additional levels of screening.				
Magnitude of Visual Impact			Very Low	
Significance of Effect			Negligible Adverse	

Table 17: Representative Viewpoint 2
PRoW L12/3/1

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298533, 169554	Users of Public Right of Way (Footpath)	62.0	0.8 km	South East
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Low		Medium
Users of PRoW through a rural setting.		Views include many degrading features including large scale buildings within the RAF St. Athan site DSG super-hanger, the upper parts of stacks at the Aberthaw Power Station and Aberthaw Cement Works and plumes from the cooling towers at Aberthaw Power Station.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
Construction operations within the eastern extent of the Site may be temporarily visible in the middle distance against the backdrop of the RAF St. Athan site. Overall, the additional elements will form a small part of the view and be short term and reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse
OPENING				
The proposed Scheme and traffic using it will be partially visible in the middle distance and within only a small part of a wide and expansive view. The addition of the new landscape features will be long term and reversible but not change the balance of the view.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse
OPERATION				
The landscape mitigation will have matured and provide additional screening of the proposed Scheme including traffic moving along it. Existing trees and shrubs are likely to have matured future and provide additional levels of screening.				
Magnitude of Visual Impact				Very Low
Significance of Effect				Negligible Adverse

**Table 18: Representative Viewpoint 3
Millands Caravan Park**

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298882,169221	Residents	44.0	0.1 km	South East
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Low		High
Primary views from properties elevated above and facing directly towards the Site		Likely to be valued locally for its rural nature, but also containing a wide range of visual detractors		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
The construction activities associated with the proposed Scheme will be clearly visible in the close distance and form new and recognisable features which are likely to become the focus of the view. The additional elements will be temporary and reversible.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPENING				
The proposed Scheme and traffic along it will be clearly visible in the close distance, beyond the 2.5 m tall acoustic barrier (located adjacent to the east bound carriageway) , the landscape mitigation will not have sufficiently matured to provide screening. The additional elements will be long term and reversible.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPERATION				
The landscape mitigation will have matured and will provide additional screening of the proposed Scheme above the acoustic barrier, however, lighting and traffic may be partially visible close to the Froglands Farm. Overall, it is anticipated that the majority of the proposed Scheme will be sufficiently screened to reduce the magnitude of visual impact. The effects will be long term and reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse

**Table 19: Representative Viewpoint 4:
Froglands Farm & Rose Cottage and un-named road**

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298976, 169179	Residents	44.0	0.0 km	South West
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Low		High
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing a wide range of visual detractors.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
The construction activities will form prominent new features within the view and change the overall balance of features and nature of the scene, be temporary and reversible.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPENING				
The proposed Scheme will be visible in the close distance and landscape mitigation measures will be insufficiently mature to provide substantial screening, However, the presence of the 2.5 m tall acoustic barrier will provide a high degree of screening of traffic using the proposed Scheme. Overall, the loss of the existing rural landscape features and addition of the new highway landscape features will change the balance of the scene, be long term but reversible.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPERATION				
The landscape mitigation will have matured and provide additional substantial screening of the proposed Scheme including traffic moving along it, however, lighting and traffic may be partially visible in the close distance and continue to provide an adverse impact on the nature of the scene. The effects will be long term and reversible.				
Magnitude of Visual Effect				Medium
Significance of Effect				Moderate Adverse

Table 20: Representative Viewpoint 5
Residential properties at Picketston (Old Barn and Picketston Cottage)

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
300150, 169587	Residents	44.0	0.7 km	South West
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Low		Medium
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing a wide range of visual detractors.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
There maybe be occasional slight views of construction activities from upper stories of the properties, however, it is considered that these operations will form a very small part of the view and not affect the balance or overall nature of the scene.				
Magnitude of Visual Impact				Very Low
Significance of Effect				Negligible Adverse
OPENING				
It is anticipated that there will may be minor views of the proposed Scheme and traffic using it from the upper stories of these residential receptors, however will form a very small part of the view and not affect the balance or overall nature of the scene..				
Magnitude of Visual Impact				Very Low
Significance of Effect				Negligible Adverse
OPERATION				
It is anticipated that there will may be minor views of the proposed Scheme and traffic using it from the upper stories of these residential receptors, however will form a very small part of the view and not affect the balance or overall nature of the scene..				
Magnitude of Visual Impact				Very Low
Significance of Effect				Negligible Adverse

Table 21: Representative Viewpoint 6
Residential properties on Partridge Road, RAF St. Athan

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298972,168730	Residents	48.0	0.4 km	North West
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Medium		High
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing existing visual detractors.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
The construction activities will be partially visible beyond the screening provided by intervening trees and residential properties, however, they will be viewed in the context of an existing rural landscape and form prominent new landscape features. Overall, they will not change the overall balance of features and nature of the scene, be temporary and reversible.				
Magnitude of Visual Impact				Medium
Significance of Effect				Moderate Adverse
OPENING				
The proposed Scheme will be visible in the middle distance and form a small part of the wider scene. Landscape mitigation measures will be insufficiently mature to provide substantially screening. Overall, the loss of the existing rural landscape features and addition of the new highway landscape features will not alter the overall balance of the scene, be long term but reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse
OPERATION				
The landscape mitigation will have matured to provide additional substantial screening of the proposed Scheme including traffic moving along it, however, lighting and traffic may be partially visible in the middle distance, the effects will be long term and reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse

Table 22: Representative Viewpoint 7
Residential properties on Eagle Road, RAF St. Athan

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298814,168812	Residents	39.0	0.3 km	North West
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Medium		High
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing existing visual detractors.		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
Although partially screened, the construction phase activities will be visible in the middle distance as new and discordant features of the scene. Overall, the addition of the new but temporary and reversible landscape features will be readily noticeable and are likely to form the focus of the view.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPENING				
The proposed Scheme will be highly visible in the middle distance and form a small part of the wider scene. Landscape mitigation measures will be insufficiently mature to provide sufficient screening. Overall, the loss of the existing rural landscape features and addition of the new highway features will change the nature of the view and alter the overall balance of the scene, be long term but reversible.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPERATION				
The landscape mitigation will have matured to provide substantial screening of the proposed Scheme including traffic moving along it, however, lighting and traffic may be partially visible in the middle distance, the effects will be long term and reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse

Table 23: Representative Viewpoint 8
Residential properties on Church Meadow, RAF St. Athan

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
298673,168708	Residents	44.0	0.3 km	North West
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Medium		High
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing limited visual detractors		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
The construction phase activities will be partially visible in the middle distance, within the western extent of the proposed Scheme as a result of the highway being constructed within a cutting. Existing (retained) vegetation within the foreground will provide some screening of activities. Overall it is predicted that the new features would be noticeable but be temporary and reversible.				
Magnitude of Visual Impact				Medium
Significance of Effect				Moderate Adverse
OPENING				
The proposed Scheme will be highly visible in the middle distance and form a small part of the wider scene. Landscape mitigation measures will be insufficiently mature to provide sufficient screening. Overall, the loss of the existing rural landscape features and addition of the new highway features will change the nature of the view and alter the overall balance of the scene, be long term but reversible.				
Magnitude of Visual Impact				Medium
Significance of Effect				Moderate Adverse
OPERATION				
The landscape mitigation will have matured to provide additional substantial screening of the proposed Scheme including traffic moving along it, however, lighting and traffic may be partially visible in the middle distance. The effects will be long term and reversible.				
Magnitude of Visual Impact				Low
Significance of Effect				Minor Adverse

Table 24: Representative Viewpoint 9
Residential properties along Heol Merioneth, Denbridge Drive and Cardigan Crescent, Boverton

Grid Reference	Receptor Type	Elevation (m AOD)	Approx. Distance from Site (km)	Direction of View
297957,169162	Residents	50.0	0.0 km	North East
Susceptibility of Receptor to Specific Change		Value of View		Receptor Sensitivity*
High		Medium		High
Primary views from properties elevated above and facing directly towards the Site.		Likely to be valued locally for its rural nature, but also containing limited visual detractors		
Size/Scale, Duration & Reversibility of Effect				
CONSTRUCTION				
The construction of the acoustic barrier parallel to the rear plot boundary will require the removal of a substantial amount of the existing semi-mature vegetation adjacent to the B4265. This will result in more open views and extensive views being possible from the upper stories of these properties, including the construction activities at the western extent of the proposed Scheme. It is envisaged, the once the acoustic barrier is installed, view from ground level will be limited to the occasional, movement of larger plant such as cranes. There will be a large scale temporary, but reversible change to the nature of the current view; with the proposed Scheme forming a contrasting feature with no possibility of short term mitigation.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPENING				
The acoustic barrier and associated mitigation planting will be installed as part of pre-commencement works, as such at the point of opening, planting will have had at least one full growing season to establish. However, this planting will not be sufficiently tall to provide any additional screening above the acoustic fence. The proposed Scheme will be partially visible from upper storey rear windows of the residential properties in the near distance. The views will be temporary, short term and reversible, but in the interim period (until the mitigation planting matures to screen views) there will be a high magnitude of change.				
Magnitude of Visual Impact				High
Significance of Effect				Major Adverse
OPERATION				
The mitigation planting adjacent to the acoustic barrier will have grown sufficiently to provide substantial screening of the proposed Scheme, to a level similar to the existing vegetation. The effects will be long term and reversible.				
Magnitude of Visual Impact				Very Low
Significance of Effect				Negligible Adverse

A summary of the effects on visual amenity during Construction, Opening and Operation is provided in Table 24 below.

Table 24 – Summary of Potential Effects on Visual Amenity at Assessed Viewpoints

REF	LOCATION	SIGNIFICANCE OF EFFECTS		
		Construction	Opening	Operation
1	PRoW L16/38/1 (Valeways Millennium Heritage Trail) & Bedford Castle (site of)	Minor Adverse	Minor Adverse	Negligible Adverse
2	PRoW L12/3/1	Minor Adverse	Minor Adverse	Negligible Adverse
3	Millands Caravan Park	Major Adverse	Major Adverse	Minor Adverse
4	Froglands Farm & Rose Cottage and un-named road.	Major Adverse	Major Adverse	Moderate Adverse
5	Residential properties at Picketston (Old Barn and Picketston Cottage)	Negligible Adverse	Negligible Adverse	Negligible Adverse
6	Residential properties on Partridge Road, RAF St. Athan	Moderate Adverse	Minor Adverse	Minor Adverse
7	Residential properties on Eagle Road, RAF St. Athan	Major Adverse	Major Adverse	Minor Adverse
8	Residential properties on Church Meadow, RAF St. Athan	Moderate Adverse	Moderate Adverse	Minor Adverse
9	Residential properties along Heol Merioneth, Denbridge Drive and Cardigan Crescent	Major Adverse	Major Adverse	Negligible Adverse

The table indicates that during construction and opening there is predicted to be significant visual effects at the majority of receptors. Once the primary and secondary landscape mitigation measures have had 15 years of growth, they will have sufficiently matured to provide substantial screening of the proposed Scheme. As a result, other than a single receptor located immediately adjacent to the proposed Scheme (viewpoint 4), all receptors will experience a 'not significant' level of visual effects.

10. MITIGATION

The proposed Scheme includes extensive primary and secondary landscape mitigation measures, as illustrated on drawings 60509148-SHT-30-0000-CT-3001 to 3008 (Appendix B). There is limited opportunity to fully mitigate the visual effects of the single receptor experiencing a long term significant effect (viewpoint 4), as such no further mitigation measures are proposed.

11. RESIDUAL EFFECTS

The assessment has determined that the proposed Scheme is likely to result in a long term significant effect on visual amenity from representative viewpoint 4, which represents views from the two residential properties of Froglands Farm and Rose Cottage. Since no additional mitigation measures are to be implemented, these effects will remain.

12. POTENTIAL CUMULATIVE LANDSCAPE & VISUAL EFFECTS

GLVIA3 defines cumulative landscape and visual effects as those that:

'result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.' (GLVIA2, 2002:p85)

In relation to LVIA the potential for cumulative effects relates primarily to inter project cumulative effects either with existing developments or future schemes with planning consent or in the planning process which have yet to be built.

Following a search of planning applications and consultation with VoGC, it has been concluded that there are no schemes currently approved or awaiting approval which require consideration for potential cumulative effects.

1.2 Cumulative Effects on Landscape Character

No cumulative landscape effects with other developments have been identified and the nature of the development proposals suggests that the host landscape is of low susceptibility to cumulative effects arising from this development alongside other potential developments.

1.3 Cumulative Effects on Visual Amenity

No in combination or sequential visual effects with other projects have been identified or are likely given the limited visibility and high degree of screening evident from representative viewpoints within the ZTV.

13. STATEMENT OF LANDSCAPE & VISUAL SIGNIFICANCE SUMMARY

The location of the proposed Scheme is within an area which is partially rural in nature, whilst being heavily influenced in places by the large scale buildings and structures associated with the RAF St. Athan site. Views towards the Site from the residential areas to the south tend to be more rural in nature, whereas the views southwards and eastwards tend to be degraded by the presence of development within and adjacent to RAF St. Athan.

Landscape

The proposed Scheme is located in a landscape which has no statutory designation, but may be valued locally for its rural appearance; however, the proposed Scheme is typical of similar development close to the Site and includes extensive landscape mitigation measures to integrate the proposed Scheme into its landscape context.

The Site contains no landscape features which are considered to be important at a local, district/ county or national scale. Although the proposed Scheme will result in the loss of a number of trees and hedgerows, overall these are not considered to be important at a Site level.

The effect on landscape character will be direct and largely relate to the visibility of the largest vehicles using the proposed Scheme and the additional source of night time lighting. At all the assessed levels, the effect of the proposed Scheme on landscape character assessment is considered to be negligible and therefore not significant.

Visual Amenity

The effect of the proposed Scheme on visual amenity is considered in the context of the adjacent developments which are recognisable features in the local landscape.

Local topography and surrounding retained vegetation, augmented by the extensive landscape mitigation to be implemented as part of the proposed Scheme will provide substantial screening of it. This will result in the proposed Scheme being completely screened or only partially visible from the majority of the views. As such it has been assessed that only a single visual receptor (Representative Viewpoint 4) will experience a significantly adverse visual effect in the long term.

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